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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|-------------------------|------------------|
| 09/990,798 | 11/14/2001 | Jeffrey P. Grossman | 0050.2025-001 | 3088 |
| 21005 | 7590 | 07/28/2005 | EXAMINER | |
| HAMILTON, BROOK, SMITH & REYNOLDS, P.C. 530 VIRGINIA ROAD P.O. BOX 9133 CONCORD, MA 01742-9133 | | | MCLEAN MAYO, KIMBERLY N | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2187 | |

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|------------------------------|------------------------|---------------------|--|
| | 09/990,798 | GROSSMAN ET AL. | |
| Examiner | Art Unit | | |
| Kimberly N. McLean-Mayo | 2187 | | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 11 May 2005.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-65 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) 24-28, 52-56, 59 and 64 is/are allowed.

6) Claim(s) 1-14, 19-23, 29-42, 47-51, 57-63 and 65 is/are rejected.

7) Claim(s) 15-18 and 43-46 is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ .

5) Notice of Informal Patent Application (PTO-152)

6) Other: ____ .

DETAILED ACTION

1. The enclosed detailed action is in response to the Amendment submitted on May 11, 2005.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 62-63 and 65 rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. A carrier wave is non-statutory subject matter.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 6-8, 11, 20-21, 29-32, 34-36, 39, 48-49, 57, 60 and 62 are rejected under 35 U.S.C. 102(b) as being anticipated by Wolczko et al. (USPN: 5,900,001).

Regarding claims 1-2, 8, 11, 29-30, 36, 39, 57, 60 and 62, Wolczko discloses a memory for storing data objects, the data objects being referenced by pointers (C 2, L 36-37; C 7, L 25-26); and a short-quasi-unique-identifier (SQUID) generator which generates SQUIDs for newly allocated data objects to be stored in the memory segment, pointers to a particular data object being associated with the data object's SQUID (C 7, L 25-30; C 15, L 43-67; C 16, L1-43).

Regarding claims 3 and 31, Wolczko discloses placing a pointer at an original memory segment when the data object is moved to a second allocated memory segment (C 16, L 44-67).

Regarding claims 4, 6-7, 32 and 34-35, Wolczko discloses moving the data object due to garbage collection (C 3, L 18-32; garbage collection intrinsically resizes/compact by removing the dead data [garbage] from the memory).

Regarding claims 20-21 and 48-49, Wolczko discloses the SQUID implemented by hardware/software (C 15, L 60-67; C 16, L 11; the SQUID is generated by performing an add function [thereby including an adder; all hardware is operated/controlled by software]).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolczko (USPN: 5,900,001) in view of Black (USPN: 5,325,524).

Wolczko discloses the limitations cited above, however, Wolczko does not disclose moving the data object from a first memory to a second memory within a distributed system. Black teaches moving a data object from a first memory [C 4, L 44-57 - storesite] to a second memory [C 4, L

44-57 - storesite] within a distributed system (Figure 2, C 4, L 44-45)(C 6, L 1-35). This feature taught by Black allows data sharing in a multi-node system by forwarding the data to a different node. Hence, it would have been obvious to one of ordinary skill in the art to use Black's teachings with the system taught by Wolczko in a multi-node system for the desirable purpose of providing data sharing thereby improving the performance of the system.

7. Claims 9 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolczko (USPN: 5,900,001) in view of DiLullo (USPN: 5,025,253).

Wolczko discloses the limitations cited above, however, Wolczko does not disclose generating the SQUID by counting. DiLullo teaches the concept of generating an object identifier via the use of a counter (C 7, L 17-21). This feature provides a simple method for generating object identifiers. Hence, it would have been obvious to one of ordinary skill in the art to use DiLullo's teachings with to generate the SQUIDs in Wolczko's system for the desirable purpose of simplicity.

8. Claims 10 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolczko (USPN: 5,900,001) view of Armstrong (PGPUB: US 20020175805).
Wolczko discloses the limitations cited above, however, Wolczko does not disclose generating the SQUID randomly. Armstrong teaches randomly generating identifiers to ensure uniqueness Section [0062, lines 8-10]. Wolczko discloses the use of quasi-unique identifiers. Hence, it would have been obvious to one of ordinary skill in the art to use Armstrong's teachings with the

teachings of Wolczko for the desirable purpose of providing an efficient means to generate quasi-unique identifiers.

9. Claims 12, 14, 40, 42, 58, 61 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolczko (USPN: 5,900,001) in view of Beier (USPN: 5,933,820). Regarding claims 12, 14, 40, 42, 58, 61 and 63, Wolczko discloses the limitations cited above in claims 1, 29, 57, 60 and 62, however, Wolczko does not disclose a comparator which compares SQUIDs associated with two different pointers wherein the comparator determines that the two pointers do not reference the same data object if the SQUIDs are different. Beier discloses a comparator which compares identifiers [functional equivalent to a SQUID] associated with two different pointers, wherein the comparator determines that the two pointers do not reference the same data object if the identifiers [pointer value is invalid] are different; and wherein the comparator determines that the two pointers reference the same data object if the identifiers are identical [pointer value is valid] and address fields of the two pointers are identical (C 6, L 63-67; C 7, L 1-12; C 11, L 15-27). This feature taught by Beier provides accuracy by preventing aliasing among the data objects. Wolczko focuses his teachings on garbage collection and thus does not disclose the manner in which the objects are referenced for general access. However, it is evident that in Wolczko's system the data is accessed and referenced and thus it would be desirable to ensure accuracy by preventing unwanted aliasing. Hence, one of ordinary skill in the art would have recognized the benefits afforded by Beier's teachings and would have been motivated to use Beier's teachings in the system taught by Wolczko for the desirable purpose of accuracy.

10. Claims 13 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolczko (USPN: 5,900,001) and Beier (USPN: 5,933,820) as applied to claims 12 and 40 above and further in view of the submitted prior art Luk ("Memory Forwarding :Enabling Aggressive Layout).

Wolczko and Beier disclose the limitations cited above in claims 12 and 40, however, they do not disclose a mechanism for reordering instructions wherein the mechanism is responsive to a comparator. However, Luk teaches this feature (refer to Section 3.2 - Data Dependence Speculation). This feature improves performance by reducing data conflicts. Hence, it would have been obvious to one of ordinary skill in the art to use Luk's teachings with the system taught by Wolczko and Beier for the desirable purpose of improved performance.

11. Claims 19 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolczko (USPN: 5,900,001) in view of the submitted prior art Carter (USPN: 5,845,331). Wolczko discloses the limitations cited above, however, Wolczko does not disclose using a guarded pointer. Carter teaches the use of guarded pointers to protect memory segments (Abstract). Hence, it would have been obvious to one of ordinary skill in the art use guarded pointers in Wolczko's system for the desirable purpose of memory protection.

12. Claims 22 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolczko (USPN: 5,900,001) in view of Beier (5,933,820).

Wolczko discloses the limitations cited above, however, Wolczko does not disclose a pointer containing its associated SQUID. The SQUIDS are stored with the objects. Beier discloses containing an identifier in an associated pointer (Figure 3, Reference 170). This feature allows easy access/extraction to/of the identifier without having to access memory. Hence, it would have been obvious to one of ordinary skill in the art to include the SQUID in Wolczko's system in the pointer for the desirable purpose of simplified access.

13. Claims 23 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolczko (USPN: 5,900,001)).

Wolczko discloses the limitations cited above, however, Wolczko does not disclose caching SQUIDs for recently used pointers. However, caching recently used data/information is well known in the art. This feature allows fast access to the information by bypassing accesses to slower memory. Hence, it would have been obvious to one of ordinary skill in the art to cache the SQUIDs of recently used pointers in Wolczko's system for the desirable purpose of improving the performance of the system.

Allowable Subject Matter

14. Claims 24-28, 52-56, 59 and 64 are allowed.

15. Claims 15-18 and 43-46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

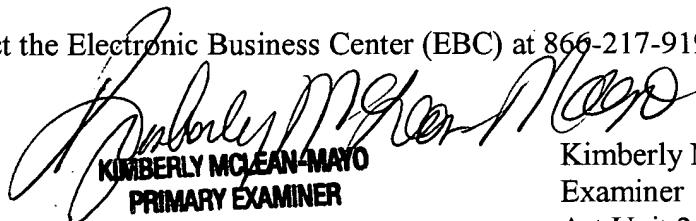
16. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly N. McLean-Mayo whose telephone number is 703-308-9592. The examiner can normally be reached on Tue, Wed, Thr (10:00 –6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on 703-308-1756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



KIMBERLY MCLEAN-MAYO
PRIMARY EXAMINER

Kimberly N. McLean-Mayo
Examiner
Art Unit 2187

KNM

July 24, 2005